

(i) Entries must be made of the results of tests of the emergency installation including transmitter antenna current, hydrometer readings of lead-acid storage batteries, voltage readings of other types of batteries, and quantity of fuel available for engine generators.

(d) (11) (ii)

(ii) When the vessel is in the open sea, a log entry must be made each time the emergency power supply is used to carry on a communication other than during a safety watch.

(d) (11) (iii)

(iii) When the vessel is in the open sea, a daily entry must be made showing whether the storage batteries were brought up to the normal full charge condition that day.

(d) (11) (iv)

(iv) Entries must be made stating when each storage battery is placed on charge or off charge.

(d) (11) (v)

(v) Entries must be made about maintenance of survival craft radio equipment, including a record of charging of any storage batteries supplying power to such equipment. The record of charging must show when such storage battery is placed on charge and when it is taken off charge.

(d) (11) (vi)

(vi) Results of inspections and tests of survival craft radio equipment, prior to departure of the vessel from a harbor or port and weekly inspections, must be entered.

(d) (11) (vii)

(vii) On a cargo vessel equipped with an auto alarm, the entry "AUTO ALARM ON" and the entry "AUTO ALARM OFF", respectively, must be made whenever the operator places the auto alarm in and out of operation. Results of the required auto alarm tests must be entered daily, including the minimum number of 4-second dashes from the testing device which were necessary to properly operate the alarm.

(d) (11) (viii)

(viii) On a cargo vessel equipped with an auto alarm, a log entry must be made whenever the auto alarm becomes inoperative. The entry must include a statement showing the time the operator was called to make repairs; the reason for the failure; parts changed; repairs; and the time the auto alarm was restored to service.

(e)

(e) Ship radiotelephone logs. Logs of ship stations which are compulsorily equipped for radiotelephony must contain the following applicable log entries and the time of their occurrence:

(e) (1)

(1) A summary of all distress, urgency and safety traffic;

(e) (2)

(2) A summary of communications conducted on other than VHF frequencies between the ship station and land or mobile stations;

(e) (3)

(3) A reference to important service incidents;

(e) (4)

(4) The position of the ship at least once a day;

(e) (5)

(5) The name of the operator at the beginning and end of the watch period;

(e) (6)

(6) The time the watch begins when the vessel leaves port, and the time it ends when the ship reaches port;

(e) (7)

(7) The time the watch is discontinued, including the reason, and the time the watch is resumed;

(e) (8)

(8) The times when storage batteries provided as a part of the required radiotelephone installation are placed on charge and taken off charge;

(e) (9)

(9) Results of required equipment tests, including specific gravity of lead-acid storage batteries and voltage reading of other types of batteries provided as a part of the compulsory installation;

(e) (10)

(10) Results of inspections and tests of compulsorily fitted lifeboat radio equipment;

(e) (11)

(11) A daily statement about the condition of the required radiotelephone equipment, as determined by either normal communication or test communication;

(e) (12)

(12) When the master is notified about improperly operating radiotelephone equipment.

(f)

(f) Applicable radiotelephone log entries. The log entries listed in paragraph (e) of this Section are applicable as follows:

(f) (1)

(1) Radiotelephony stations subject to the Communications Act, the Safety Convention, or the Bridge-to-Bridge Act must record entries indicated by paragraphs (e)(1) through (e)(12) of this section. Additionally, the radiotelephone log must provide an easily identifiable, separate section relating to the required inspection of the ship's radio station. Entries must be made in this section giving at least the following information.

(f) (1) (i)

(i) For ships that pass the inspection:

(f) (1) (i) (A)

(A) The date the inspection was conducted.

(f) (1) (i) (B)

(B) The date by which the next inspection needs to be completed.

(f) (1) (i) (C)

(C) The inspector's printed name, address and class of FCC license (including the serial number).

(f) (1) (i) (D)

(D) The results of the inspection, including any repairs made.

(f) (1) (i) (E)

(E) The inspector's signed and dated certification that the vessel meets the requirements of the Communications Act and, if applicable, the Safety Convention and the Bridge-to-Bridge Act contained in subparts Q, R, S, U, or W of this part and has successfully passed the inspection.

(f) (1) (i) (F)

(F) The vessel owner, operator, or ship's master's certification that the inspection was satisfactory.

(f) (1) (ii)

(ii) For ships that fail the inspection:

(f) (1) (ii) (A)

(A) The date the inspection was conducted.

(f) (1) (ii) (B)

(B) The inspector's printed name, address and class of FCC license (including the serial number).

(f) (1) (ii) (C)

(C) The reason that the ship did not pass the inspection.

(f) (1) (ii) (D)

(D) The date and time that the ship's owner, operator or master was notified that the ship failed the inspection.

(f) (2)

(2) Radiotelephony stations subject to the Great Lakes Agreement and the Bridge-to-Bridge Act must record entries indicated by paragraphs (e)(1), (5), (6), (7), (8), (9), (11) and (12) of this section. Additionally, the radiotelephone log must provide an easily identifiable, separate section relating to the required inspection of the ship's radio station. Entries must be made in this section giving at least the following information:

(f) (2) (i)

(i) The date the inspection was conducted;

(f) (2) (ii)

(ii) The date by which the next inspection needs to be completed;

(f) (2) (iii)

(iii) The inspector's printed name, address and class of FCC license (including the serial number);

(f) (2) (iv)

(iv) The results of the inspection, including any repairs made;

(f) (2) (v)

(v) The inspector's signed and dated certification that the vessel meets the requirements of the Great Lakes Agreement and the Bridge-to-Bridge Act contained in Subparts T and U of this part and has successfully passed the inspection; and

(f) (2) (vi)

(vi) The vessel owner, operator, or ship's master's certification that the inspection was satisfactory.

(f) (3)

(3) Radiotelephony stations subject to the Bridge-to-Bridge Act must record entries indicated by paragraphs (e)(1), (5), (6), (7), (11) and (12) of this section.

#### **s 80.411 Vessel certification or exemption.**

(a)

(a) Application. The application procedures for inspection and certification and for exemptions are contained in s 80.59.

(b)

(b) Posting. Communications Act, Safety Convention and Great Lakes Radio Agreement certificates or exemptions must be posted in a prominent, accessible place in the ship. Ships subject to the Great Lakes Agreement may, in lieu of a posted certificate, certify compliance in the station log required by section 80.409(f).

#### **s 80.413 On-board station equipment records.**

(a)

(a) The licensee of an on-board station must keep equipment records which show:

(a) (1)

(1) The ship name and identification of the on-board station;

- (a) (2)
- (2) The number and type of repeater and mobile units used on-board the vessel;  
and
- (a) (3)
- (3) The date and type of equipment which is added or removed from the on-board  
station.

**s 80.415 ITU publications.**

- (a)
- (a) The following publications listed in the table contained in s 80.401 are  
published by the International Telecommunications Union (ITU):

- (a) (1)
- (1) Manual for Use of the Maritime Mobile and Maritime Mobile-Satellite  
Services.
- (a) (2)
- (2) List IV--List of Coast Stations.
- (a) (3)
- (3) List V--List of Ship Stations.
- (a) (4)
- (4) List VI--List of Radiodetermination and Special Services Stations.
- (a) (5)
- (5) List VII A--Alphabetical List of Call Signs of Stations Used by the  
Maritime Mobile Service, Ship Station Selective Call Numbers or Signals and  
Coast Station Identification Numbers or Signals.

- (b)
- (b) The publications listed in paragraph (a) of this section may be purchased  
from:

International Telecommunication Union, General Secretariat--Sales Section, Place  
des Nations, CH-1211 Geneva 20, Switzerland

**s 80.417 FCC Rules and Regulations.**

The Commission's printed publications are described in Subpart C of Part O of  
this chapter. These publications may be purchased from the Superintendent of  
Documents, U.S. Government Printing Office, Washington, DC 20402. The  
Commission does not furnish copies of these publications but will furnish a  
price list, Information Services and Publications-Bulletin No. 1, upon request.  
Requests for copies of this list should be directed to the Office of Public  
Affairs, Public Service Division, Federal Communications Commission, Washington,  
DC 20554.

**s 80.451 Supplemental eligibility requirements.**

A public coast station license may be granted to any person meeting the  
citizenship provisions of s 80.15(b).

**s 80.453 Scope of communications.**

Public coast stations provide ship/shore radiotelephone ~~and radiotelegraph~~ services.

(a)

(a) Public coast stations are authorized to communicate:

(a) (1)

(1) With any ship or aircraft station operating in the maritime mobile service, for the transmission or reception of safety communication;

(a) (2)

(2) With any land station to exchange safety communications to or from a ship or aircraft station;

(a) (3)

(3) With Government and non-Government ship and aircraft stations to exchange public correspondence;

(a) (4)

(4) With units on land in accordance with s 80.123.

(b)

(b) Public coast stations are authorized to communicate with a designated station at a remote fixed location where other communication facilities are not available.

(c)

(c) Public coast stations are authorized to transmit meteorological and navigational information of benefit to mariners.

(d)

~~(d) Each public coast telegraphy station is authorized to communicate with other public coast telegraphy stations to exchange message traffic destined to or originated at mobile stations:~~

~~(d) (1)~~

~~(1) To exchange operating signals, brief service messages or safety communication;~~

~~(d) (2)~~

~~(2) To exchange message traffic destined for a mobile station when the coast station initially concerned is unable to communicate directly with the mobile station;~~

~~(d) (3)~~

~~(3) In the Great Lakes region, to exchange message traffic originated at a mobile station when the use of available point to point communication facilities would delay the delivery of such message traffic;~~

~~(d) (4)~~

~~(4) Utilization of radiotelegraphy must not incur additional charges or replace available point-to-point communication facilities;~~

~~(d) (5)~~

~~(5) Only authorized working frequencies within the band 415 kHz to 5000 kHz must be employed for communications between coast stations;~~

~~(d) (6)~~

~~(6) Harmful interference must not be caused to communication between mobile stations and coast stations or between mobile stations.~~

~~s 80.455 Assignment and use of frequencies for manual Morse code telegraphy.~~

(a)

~~(a) The frequencies designated in ss 80.355 and 80.357 may be licensed for use by coast stations employing telegraphy.~~

**s 80.459 Digital selective calling.**

Subpart H of this part lists frequencies assignable for DSC.

**s 80.461 Narrow-band direct-printing.**

Subpart H of this part lists the frequencies assignable to public coast stations for operations with ship stations. Operating procedures are listed in Subpart C of this part.

**s 80.465 Assignment and use of frequencies for telephony.**

Subpart H of this part lists the frequencies available for assignment to public coast stations for telephony operations.

**s 80.467 Duplication of VHF service.**

No duplication of service areas as determined by Subpart P of this part will be permitted by public coast stations operating on the same VHF public correspondence channel. Within the service area of a station, the ratio of desired to undesired co-channel signal strengths on public correspondence channels must be at least 12dB.

**s 80.469 Maritime mobile repeater stations in Alaska.**

(a)

(a) Maritime mobile repeater stations are authorized to extend the range of communication between a VHF public coast station located in Alaska and ship stations.

(b)

(b) On a secondary basis, maritime mobile repeater stations may be authorized to extend the range of a private coast station:

(b) (1)

(1) In an area where VHF common carrier service is not available;

(b) (2)

(2) A maritime mobile repeater station license expires 60 days after a public coast station in the area begins service.

<Information collection requirements for subsection (c) are not yet effective; OMB approval pending.>

(c)

(c) Maritime mobile repeater stations may not be authorized in cases where operational fixed frequencies can be employed.

(d)

(d) The provisions relating to duplication of service described in Subpart P apply to maritime mobile repeater stations.

(e)

(e) The frequencies 157.275 and 161.875 MHz are assignable to maritime mobile repeater stations.

(f)

(f) Each maritime mobile repeater station must:

(f) (1)

(1) Deactivate automatically within 5 seconds after the signals controlling the station cease; and

(f) (2)

(2) During periods when it is not controlled from a manned control point, deactivate automatically not more than 20 minutes after its activation by a mobile unit.

#### **s 80.471 Discontinuance or impairment of service.**

A public coast station must not discontinue or impair service unless authorized to do so by the Commission.

#### **s 80.475 Scope of service of the Automated Maritime Telecommunications System (AMTS).**

(a)

(a) AMTS applicants proposing to serve inland waterways must show how the proposed system will provide continuity of service along more than 60% of each of one or more navigable inland waterways. Inland waterways less than 240 kilometers (150 miles) long must be served in their entirety. AMTS applicants proposing to serve portions of the Atlantic, Pacific or Gulf of Mexico coastline must define a substantial navigational area and show how the proposed system will provide continuity of service for it. A separate Form 503 is not required for each coast station in a system. However, the applicant must provide the technical characteristics for each proposed coast station, including transmitter type, operating frequencies, emissions, transmitter output power, antenna arrangement and location.

(a) (1)

(1) Applicants proposing to locate a coast station transmitter within 169 kilometers (105 miles) of a channel 13 television station or within 129 kilometers (80 miles) of a channel 10 television station or with an antenna height greater than 61 meters (200 feet) must submit an engineering study clearly showing the means of avoiding interference with television reception within the grade B contour. See s 80.215(h).

(a) (2)

(2) Additionally, applicants required to submit the above specified must give written notice of the filing of such application(s) to the television stations which may be affected. A list of the notified television stations must be submitted with the subject applications.

(b)

(b) In lieu of public correspondence service an AMTS system may provide private coast station communications related to the operational requirements of ships including transmissions of fuel, weather, position and supply reports. However,

such communications may be provided only to ship stations whose licensees make cooperative arrangements with the AMTS coast station licensees. In emergency and distress situations, services must be provided without prior arrangements.

**s 80.477 AMTS points of communication.**

(a)

(a) AMTS coast stations may communicate with fixed platform stations located in the offshore waters of the Gulf of Mexico, with ship stations, and with land units in accordance with s 80.123.

(b)

(b) AMTS licensees in the offshore waters of the Gulf of Mexico may use AMTS coast and ship station frequencies on a secondary basis for fixed service communications to support offshore AMTS operations.

(c)

(c) AMTS service may be provided to any vessel within communication service range of an AMTS station even though the vessel may not be operating within the confines of a served waterway.

**s 80.479 Assignment and use of frequencies for AMTS.**

(a)

(a) The frequencies assignable to AMTS stations are listed in Subpart H of this part. These frequencies are assignable to ship and public coast stations for voice, facsimile and radioteletypewriter communications.

**s 80.501 Supplemental eligibility requirements.**

(a)

(a) A private coast station or a marine utility station may be granted only to a person who is:

(a) (1)

(1) Regularly engaged in the operation, docking, direction, construction, repair, servicing or management of one or more commercial transport vessels or United States, state or local government vessels; or is

(a) (2)

(2) Responsible for the operation, control, maintenance or development of a harbor, port or waterway used by commercial transport vessels; or is

(a) (3)

(3) Engaged in furnishing a ship arrival and departure service, and will employ the station only for the purpose of obtaining the information essential to that service; or is

(a) (4)

(4) A corporation proposing to furnish a nonprofit radio communication service to its parent corporation, to another subsidiary of the same parent, or to its own subsidiary where the party to be served performs any of the eligibility activities described in this section; or is

(a) (5)

(5) A nonprofit corporation or association, organized to furnish a maritime mobile service solely to persons who operate one or more commercial transport vessels; or is

(a) (6)



(6) Responsible for the operation of bridges, structures or other installations that area part of, or directly related to, a harbor, port or waterway when the operation of such facilities requires radio communications with vessels for safety or navigation;

or is

(a) (7)

(7) A person controlling public moorage facilities; or is

(a) (8)

(8) A person servicing or supplying vessels other than commercial transport vessels; or is

(a) (9)

(9) An organized yacht club with moorage facilities; or is

(a) (10)

(10) A nonprofit organization providing noncommercial communications to vessels other than commercial transport vessels.

(b)

(b) Each application for station authorization for a private coast station or a marine utility station must be accompanied by a statement indicating eligibility under paragraph (a) of this section.

#### **s 80.503 Cooperative use of facilities.**

(a)

(a) A person engaged in the operation of one or more commercial transport vessels or government vessels may receive maritime mobile service from a private coast station or a marine utility station on shore even though not the licensee of the private coast station or the marine utility station. Restrictions on cooperative arrangements are as follows:

(a) (1)

(1) Foreign persons must be the licensees of the radio stations installed on board their vessels.

(a) (2)

(2) The licensee of a private coast station or marine utility station on shore may install ship radio stations on board United States commercial transport vessels of other persons. In each case these persons must enter into a written agreement verifying that the ship station licensee has the sole right of control of the ship stations, that the vessel operators must use the ship stations subject to the orders and instructions of the coast station or marine utility station on shore, and that the ship station licensee will have sufficient control of the ship station to enable it to carry out its responsibilities under the ship station license.

(b)

(b) Cooperative arrangements are limited concerning cost and charges as follows:

(b) (1)

(1) The arrangement must be established on a non-profit, cost-sharing basis by written contract. A copy of the contract must be kept with the station records and made available for inspection by Commission representatives.

(b) (2)

(2) Contributions to capital and operating expenses are to be prorated on an equitable basis among all persons who are parties to the cooperative arrangement. Records which reflect the cost of the service and its nonprofit, cost-sharing nature must be maintained by the licensee of the station and made available for inspection by Commission representatives.

**s 80.505 Points of communication.**

(a)

(a) Private coast stations and marine utility stations are authorized to communicate:

(a) (1)

(1) With any mobile station in the maritime mobile service for the exchange of safety communications;

(a) (2)

(2) With any land station for the purpose of aiding the exchange of safety communications;

(a) (3)

(3) With ship stations.

(b)

(b) Private coast stations of the same licensee may be authorized to communicate on a secondary basis between themselves if:

(b) (1)

(1) The communications are confined exclusively to those for which authority has been granted the coast station, and concerns ships with which one or both of the coast stations are authorized to communicate; and

(b) (2)

(2) Other satisfactory point-to-point communication facilities between the coast stations are unavailable; and

(b) (3)

(3) Coast stations which communicate with each other are not more than 160 km (100 miles) apart; and

(b) (4)

(4) Harmful interference is not cause to mobile stations.

(c)

(c) A private coast station and associated marine utility stations serving and located on a shipyard regularly engaged in construction or repair of commercial transport vessels or Government vessels are authorize to communicate between stations when

they are licensed to the same entity and communications are limited to serving the needs of ships on a non-interference basis to other stations in the maritime mobile service. A separate showing is required.

**s 80.507 Scope of service.**

(a)

(a) A private coast station or marine utility station using telephony serves the operational and business needs of ships including the transmission of safety communication.

(b)

(b) In areas where environmental communications are provided by U.S. Government stations or by public coast stations, private coast stations and marine utility stations on shore must not duplicate that service. In other areas, private coast stations and marine utility stations on shore may transmit weather and hydrographic information required for the ships with which they normally communicate. Private coast stations may provide environmental communication service in areas where adequate service is not available.

(c)

(c) Each marine utility station on shore must be operated as a private coast station except that it may be operated at temporary unspecified locations. Marine utility stations on ships are operated as ship stations.

(d)

(d) Each private coast station is authorized by rule to use hand-held marine radios in the vicinity of the station's fixed transmitter site on those frequencies assigned to the private coast station. Hand-held communications must conform to those normally permitted under a marine utility station authorization and must be limited to contact with the associated private coast station and ship stations in the vicinity of the private coast station.

#### **s 80.509 Frequency assignment.**

Frequencies assignable to private coast stations and marine utility stations are listed in Subpart H.

#### **s 80.511 Assignment limitations.**

(a)

(a) Only one port operation, one commercial and one non-commercial frequency will be assigned to a private coast station or marine utility station. Applications for authority to use more than one frequency in any one of the above three categories must include a showing of need as specified below.

(b)

(b) An application for an additional frequency by a person who services vessels, must include a description of the vessels with which communication is planned and a statement that the applicant has personal knowledge that the ship radio stations are not capable of operating on working frequencies already assigned to the coast station.

<Information collection requirements for subsection (c) are not yet effective; OMB approval pending.>

(c)

(c) An applicant for an additional frequency based on congestion of the assigned frequency may be asked by the Commission to show that for any four periods of five consecutive days each, in the preceding six months, the assigned frequency was in use at least twenty-five percent of the time during three hours of daily peak activity.

#### **s 80.513 Frequency coordination.**

(a)

(a) Except as provided in paragraphs (b) and (c) of this section each application for a new VHF private coast station license or modification of an existing license to be located in an area having a recognized frequency coordinating committee must be accompanied by:

(a) (1)

(1) A report based on a field study, indicating the degree of probable interference to existing stations operating in the same area. The applicant must consider all stations operating on the working frequency or frequencies

requested or assigned within 80 km (50 miles) of the proposed station location, and

(a) (2)

(2) The report must include a statement that all existing licensees on the frequency within 80 km (50 miles) and the frequency coordinating committee have been notified of the applicant's intention to file an application. The notice of intention to file must provide the licensees concerned and the advisory committee with the following information: The frequency and emission; transmitter location and power; and the antenna height proposed by the applicant.

(b)

(b) Applications for modification need not be accompanied by the field study where the modification does not involve any change in frequency(ies), power, emission, antenna height, antenna location or area of operation.

<Information collection requirements for subsection (c)(1) are not yet effective; OMB approval pending.>

(c) (1)

(c)(1) In lieu of the field study, the applicant may acquire a statement from a frequency coordinating committee. The applicant must certify on the application concerning the recommendations of the coordinating committee. The committee must comment on the requested frequency or the proposed changes in the authorized station and give an opinion regarding the probable interference to existing stations. The committee must consider all stations operating on the requested frequency within 80 km (50 miles) of the proposed station location. The frequency coordinating committee statement must also recommend a frequency which will result in the least amount of interference to proposed and existing stations. Committee recommendations may also include comments on technical factors and may recommend restrictions to minimize interference.

(c) (2)

(2) A frequency coordinating committee must be representative of all persons who are eligible for VHF private coast stations within the service area of the recognized frequency coordinating committee. A statement of organization, service area and composition of the committee must be submitted to the Commission for approval. The functions of any coordinating committee are purely advisory to the applicant and the Commission. Its recommendations are not binding upon either the applicant or the Commission.

#### **s 80.514 Marine VHF frequency coordinating committee(s).**

This section contains the names of organizations that have been recognized by the Commission to serve as marine VHF frequency coordinating committees for their respective areas.

(a)

(a) The Southern California Marine Radio Council serves the California counties of Santa Barbara, Kern, San Bernardino, Ventura, Los Angeles, Orange, Riverside, San Diego, Imperial and the Channel Islands.

(b)

(b) The North Pacific Marine Radio Council serves the following counties in the State of Washington: Clallam, Island, Jefferson, King, Kitsap, Mason, Pierce, San Juan, Skagit, Snohomish, Thurston, and Whatcom.

**s 80.515 Limitations on use.**

A private coast station or marine utility station using telephony must:

- (a)
- (a) Not be used for public correspondence;
- (b)
- (b) Not be used to transmit program material for radio broadcasting; and
- (c)
- (c) Not be used to transmit press material or news items which are not required to serve the needs of ships.

**s 80.517 Time limitation on communication.**

All communication engaged in by private coast stations and marine utility stations must be limited to the minimum practicable transmission time. Each station licensee must employ standardized operating practices and procedures.

**s 80.519 Station identification.**

- (a)
- (a) Stations must identify transmissions by announcing in the English language the station's assigned call sign. In lieu of the identification of the station by voice, the official call sign may be transmitted by tone-modulated telegraphy in international Morse Code manually or by means of an automatic device approved by the Commission. Transmissions on the navigation frequency (156.650 MHz) by stations on drawbridges may be identified by use of the name of the bridge in lieu of the call sign. Identification must be made:
  - (a) (1)
  - (1) At the beginning and end of each exchange of communications and;
  - (a) (2)
  - (2) At intervals not exceeding 15 minutes whenever transmissions or communications are sustained for more than 15 minutes.
- (b)
- (b) Marine utility stations, private coast stations, and associated hand-held radios, when exchanging communications, may be identified by a unit identifier in lieu of the call sign. Identification by transmission of the assigned call sign must be at the end of the exchange or at least once every 15 minutes.

**s 80.551 Applicability.**

This subpart contains rules applicable to operational fixed stations.

**s 80.553 Supplemental eligibility requirements.**

<Information collection requirements for intro. par. are not yet effective;  
OMB approval pending.>

An applicant for an operational fixed station must certify that:

- (a)
- (a) The applicant is the licensee of a coast station;
- (b)
- (b) Other suitable telecommunications facilities are not available to satisfy coast station requirements.

**s 80.555 Scope of communication.**

An operational fixed station provides control, repeater or relay functions for its associated coast station.

**s 80.557 Assignment and use of frequencies.**

The specific frequencies for these stations are listed in Subpart H of this part.

**s 80.559 Licensing limitations.**

Operational fixed stations are subject to the following licensing limitations:

- (a)
- (a) A maximum of four frequencies will be assigned.
- (b)
- (b) Stations will not be authorized when applications indicate less than 16 km (10 miles) separation between a proposed station and a TV transmitter operating on either Channel 4 or 5, or from the post office of a community in which either channel is assigned but not in operation.
- (c)
- (c) Stations located between 16 km (10 miles) and 128 km (80 miles) of a TV transmitter operating on either Channel 4 or 5, or from the post office of a community in which either channel is assigned but not in operation, are secondary to TV operations within the Grade B service contour. [FN1]

[FN1] OET Bulletin No. 67, March 1988, entitled "Potential Interference from Operational Fixed Stations in the 72-76 MHz Band to Television Channels 4 and 5" describes an analytical model that can be used to calculate the potential interference that might result from a given fixed station operation. Copies of the bulletin may be obtained from the Commission's current duplication contractor. Information concerning the current duplication contractor may be obtained from the Office of Public Affairs, Consumer Assistance and Small Business Division, Telephone (202) 632-7000.

**s 80.601 Scope of communications.**

Stations on land in the Maritime Radiodetermination Service provide a radionavigation or radiolocation service for ships.

**s 80.603 Assignment and use of frequencies.**

The frequencies available for assignment to shore radionavigation/radiolocation stations are contained in Subpart H of this part.

**s 80.605 U.S. Coast Guard coordination.**

<Information collection requirements for subsection (a) are not yet effective; OMB approval pending.>

(a)

(a) Radionavigation coast stations operated to provide information to aid in the movement of any ship are private aids to navigation. Before submitting an application for a radionavigation station, an applicant must obtain written permission from the cognizant Coast Guard District Commander at the area in which the device will be located. The Commission may request an applicant to provide documentation as to this fact. Note: Surveillance radar coast stations do not require U.S. Coast Guard approval.

(b)

~~(b) Applications for certification of coast and ship station transponders must include a description of the technical characteristics of the equipment including the scheme of interrogation and the characteristics of the transponder response. When a certification application is submitted to the Commission a copy of such application must be submitted concurrently to: Commandant (G-TTC-3), U.S. Coast Guard, Washington, DC 20593.~~

(c)

~~(c) Prior to submitting an application for a non-selectable transponder coast station license in the 2920-3100 MHz or 9320-9500 MHz band the applicant must submit a letter requesting written approval of the proposed station to the cognizant Coast Guard District Commander of the area in which the device will be located. The letter must include:~~

~~(c) (1)~~

~~(1) The necessity for the station;~~

~~(c) (2)~~

~~(2) The latitude and longitude of its position;~~

~~(c) (3)~~

~~(3) The transponder antenna height above sea level;~~

~~(c) (4)~~

~~(4) The antenna azimuth response (angle of directivity);~~

~~(c) (5)~~

~~(5) The manufacturer and model number of the transponder;~~

~~(c) (6)~~

~~(6) The identifying Morse character for transponders used as racons;~~

~~(c) (7)~~

~~(7) The name and address of the person responsible for the operation and maintenance of the station;~~

~~(c) (8)~~

~~(8) The time and date during which it is proposed to operate the station; and~~

<Information collection requirements for subsection (c)(9) are not yet effective; OMB approval pending.>

(c) (9)

~~(9) The maximum station e.i.r.p. if it would exceed 5 watts. The Commission may request an applicant to provide a copy of the request and the U.S. Coast Guard approval.~~

<Information collection requirements for subsection (d) are not yet effective; OMB approval pending.>

(d)

~~(d) Prior to submitting an application for a non-selectable transponder ship station license in the 2920-3100 MHz or 9320-9500 MHz band the applicant must submit a letter requesting approval of the proposed station to: Commandant (CNSR), U.S. Coast Guard, Washington, DC 20593. The letter must include the name, address and telephone number of a person or a point of contact responsible for the operation of the device, the specific need for the station, the name of the associated ship, the area in which the transponder will be used, and the hours of operation. The Commission may request an applicant to provide a copy of the request and the U.S. Coast Guard approval.~~

**s 80.651 Supplemental eligibility requirements.**

(a)

(a) An applicant for a maritime support station must demonstrate a requirement for training personnel associated with the maritime service or for the testing, demonstration or maintenance of ship or coast radio equipment.

**s 80.653 Scope of communications.**

(a)

(a) Maritime support stations are land stations authorized to operate at permanent locations or temporary unspecified locations.

(b)

(b) Maritime support stations are authorized to conduct the following operations:

(b) (1)

(1) Training of personnel in maritime telecommunications;

(b) (2)

(2) Transmissions necessary for the test and maintenance of maritime radio equipment at repair shops and at temporary unspecified locations;

(b) (3)

(3) Transmissions necessary to test the technical performance of the licensee's public coast station(s) radiotelephone receiver(s); and

(b) (4)

(4) Transmissions necessary for radar/racon equipment demonstration.

**s 80.655 Use of frequencies.**

(a)



(a) The frequencies available for assignment to maritime support stations are described or listed in:

(a) (1)

(1) Section 80.373 for scope of communications described in s 80.653 (b) (1);

(a) (2)

(2) Sections 80.373 and 80.385 for scope of communications described in s 80.653(b) (2); and

(a) (3)

(3) Section 80.389 for scope of communications described in s 80.653 (b) (3) and (4).

(b)

(b) Frequencies must be used only on a secondary, non-interference basis to operational maritime communications.

(c)

(c) Use of frequencies assigned to services other than the maritime radiolocation service is limited to one hour per twenty four hour period.

#### **s 80.659 Technical requirements.**

The authorized frequency tolerance, class of emission, bandwidth, and transmitter power for maritime support stations are contained in Subpart E of this part under the category associated with the intended use except for power limitations imposed upon stations operating within the scope of s 80.653(b) (3), which are further limited by the provisions of s 80.215(f).

#### **s 80.701 Scope of service.**

There are two classes of Alaska Fixed stations. Alaska-public fixed stations are common carriers, open to public correspondence, which operate on the paired duplex channels listed in Subpart H of this part. Alaska-private fixed stations may operate on simplex frequencies listed in Subpart H of this part to communicate with other Alaska private fixed stations or with ship stations, and on duplex frequencies listed in Subpart H of this part when communicating with the Alaska-public fixed stations. Alaska-private fixed stations must not charge for service, although third party traffic may be transmitted. Only Alaska-public fixed stations are authorized to charge for communication services.

#### **s 80.703 Priority of distress and other signals.**

Alaska-public fixed stations, when operating on an authorized carrier frequency which is also used by the maritime mobile service, must give priority to distress, urgency or safety signals, or to any communication preceded by one of these signals.

#### **s 80.705 Hours of service of Alaska-public fixed stations.**

Each Alaska-public fixed station whose hours of service are not continuous must not suspend operations before having concluded all communications of an emergency nature.

**s 80.707 Cooperative use of frequency assignments.**

(a)

(a) Only one Alaska-public fixed station will be authorized to serve any area whose point-to-point communication needs can be adequately served by a single radio communication facility.

(b)

(b) Each radio channel authorized for use by an Alaska-private fixed station is available on a shared basis only. All station licensees must cooperate in the use of their respective frequency assignments to minimize interference.

**s 80.709 Frequencies available.**

Frequencies assignable to Alaska fixed stations are listed in Subpart H of this part.

**s 80.711 Use of U.S. Government frequencies.**

Alaska-public fixed stations may be authorized to use frequencies assigned to U.S. Government radio stations for communications with Government stations or for coordination of Government activities.

**s 80.751 Scope.**

This subpart specifies receiver antenna terminal requirements in terms of power, and relates the power available at the receiver antenna terminals to transmitter power and antenna height and gain. It also sets forth the co-channel interference protection that VHF public coast station geographic area licensees must provide to incumbents and to other VHF public coast station geographic area licensees.

**s 80.753 Signal strength requirements at the service area contour.**

(a)

(a) The requirements for reception by a marine VHF shipboard receiver are satisfied if the field strength from the coast station, calculated in accordance with s 80.771 is at least +17 dBu above one microvolt.

(b)

(b) These field strengths, voltages and powers at the receiver input are equivalent:

(b) (1)

(1) -132 dBW (decibels referred to 1 watt).

(b) (2)

- (2) 1.8 microvolts across 50 ohms.
- (b) (3)
- (3) +17 dBu (decibels referred to 1 microvolt per meter).
- (b) (4)
- (4) 7 microvolts per meter.

**s 80.755 Applicability.**

Applications for maritime frequencies in the 156-162 MHz band must include a map showing the proposed service area contour. The service area contour must be computed in accordance with the following procedures.

**s 80.757 Topographical data.**

- (a)
  - (a) In the preparation of profile graphs and in determining the location and height above sea level of the antenna site, the elevations or contour intervals must be taken from U.S. Geological Survey topographic quadrangle maps, U.S. Army Corps of Engineers maps or Tennessee Valley Authority maps, whichever is the latest, for all areas for which maps are available. If such maps are not published for the area in question, the next best topographic information must be used. The maps used must include the principal area to be served. U.S. Geological Survey topographic quadrangle maps may be obtained from the Eastern Distribution Branch, U.S. Geological Survey, 1200 South Eads Street, Arlington, VA 22202, for maps of areas east of the Mississippi River, including Minnesota, Puerto Rico, and the Virgin Islands, and from the Western Distribution Branch, U.S. Geological Survey, Federal Center, Denver CO 80225, for maps of areas west of the Mississippi River, including Alaska, Hawaii, Louisiana, Guam and American Samoa. Sectional aeronautical charts are available from the Distribution Division, National Ocean Service, Riverdale, MD 20840.
- (b)
  - (b) In lieu of maps, the average terrain elevation may be computer generated, using elevations from a 30 second point or better topographic data file such as those available for the U.S. Geological Survey's National Geographic Information Center or the National Oceanic and Atmospheric Administration's National Geophysical Data Center. In case of dispute maps will be used to determine the correct value.

**s 80.759 Average terrain elevation.**

- (a) (1)
  - (a) (1) Draw radials from the antenna site for each 45 degrees of azimuth starting with true north. Any such radial which extends entirely over land from the antenna site to the point of +17 dBu field strength need not be drawn.
- (a) (2)
  - (2) If the distance from the antenna site to the point of +17 dBu field strength between any of the 45 degrees radials would be less than the distances calculated along these radials, an additional radial between such adjacent radials must be plotted and calculations made in each case. Each additional radial must be that radial along which it appears by inspection that transmission loss would be greatest.
- (b)

(b) Draw a circle of 16 km (10 statute mile) radius using the antenna site as the center. Divide each radial into 320 meter (0.2 statute mile) increments inside the circumference to the 3.2 km (2 statute mile) point.

(c)

(c) Calculate the height above sea level of each 320 meter (0.2 statute mile) division by interpolating the contour intervals of the map, and record the value.

(d)

(d) Average the values by adding them and dividing by the number of readings along each radial.

(e)

(e) Calculate the height above average terrain by averaging the values calculated for each radial.

#### **s 80.761 Conversion graphs.**

The following graphs must be employed where conversion from one to the other of the indicated types of units is required.

(a)

(a) Graph 1. To convert effective radiated power in watts to dBk or to dBW, find the power in watts on the horizontal axis. Move vertically along the line representing the power to the diagonal line. Move horizontally from the diagonal to the right side to read dBW and to the left to read dBk.

(b)

(b) Graph 2. To convert microvolts across 50 ohms to received power in dBW, find the signal in microvolts on the horizontal axis. Move vertically to the diagonal line, then move right horizontally to read dBW.

<image not available>

<image 2 not available>

(c)

(c) Graph 3. To convert received power in dBW to field intensity in dBu find the received power in dBW on the horizontal axis. Move vertically to the diagonal line, then move right horizontally to read dBu.

<image 3 not available>

#### **s 80.763 Effective antenna height.**

The effective height of the antenna is the vertical distance between the center of the radiating system above the mean sea level and the average terrain elevation.

#### **s 80.765 Effective radiated power.**

Effective radiated power is used in computing the service area contour. The effective radiated power is derived from the transmitter output power, loss in the transmission system including duplexers, cavities, circulators, switches and filters, and the gain relative to a half-wave dipole of the antenna system.

**s 80.767 Propagation curve.**

The propagation graph, s 80.767 Graph 1, must be used in computing the service area contour. The graph provides data for field strengths in dBu for an effective radiated power of 1 kW, over sea water, fresh water or land (smooth earth); transmitting antenna heights of 4,800, 3,200, 1,600, 800, 400, 200, and 100 feet; based on a receiving antenna height of 9 meters (30 feet), for the 156-162 MHz band. The use of this is described in this section.

(a)

(a) Calculate the effective radiated power of the coast station, Ps in dB referred to 1 kW (dBk), as follows:

$$Ps = Pt + G - L$$

where,

Pt=Transmitter output power in dB referred to 1 kW: Transmitter output power in watts is converted to dBk by  $Pt=10 [\log_{10} (\text{Power in watts})]-30$ . Also see s 80.761 Graph 1 for a conversion graph.

G=Antenna gain in dB referred to a standard half-wave dipole, in the direction of each plotted radial, and

L=Line losses between the transmitter and the antenna, in dB.

Note.--To determine field strengths where the distance is known, for effective radiated powers other than 1kW (0 dBk): Enter the graph from the "statute miles" scale at the known distance, read up to intersection with the curve for the antenna height, read left to the "dBu for 1 kW radiated" scale and note the referenced field strength (Fe). The value of the actual field strength (F) in dBu will be  $F=Fe+Ps$  where Ps is the effective radiated power calculated above.

Note.--To determine distance, where the actual field strength is specified, for effective radiated powers other than 0 dBk: The value of the field referenced strength will be  $Fe=F-Ps$  in dBu. Enter the graph, from the "dBu for 1 kW radiated" scale at the corrected value of Fe, read right to intersection with the antenna height, read down to "statute miles" scale.

(b)

(b) Determine the antenna height. For antenna heights between the heights for which this graph is drawn, use linear interpolation; assume linear height-gain for antennas higher than 4,800 feet.

(c)

(c) For receiver antenna heights lower than 9 meters (30 feet), assume that the field strength is the same as at 9 meters (30 feet).

(d)

(d) Assume that propagation over fresh water or over land is the same as that over sea water.

<image 1 not available>

**s 80.769 Shadow loss.**

Where the transmission path is obstructed the received signal must be adjusted to include shadow loss. Attenuation due to shadowing must be taken from s 80.769 Graph 1, as follows:

(a)

(a) Inspect the map(s) to determine if a hill(s) obstructs an imaginary line of sight (dashed line on illustrative profiles of s 80.769 Graph 1 from the average terrain elevation at the coast station antenna to the water level at the ship location. If average terrain elevation exceeds the actual ground elevation at the antenna site, the latter elevation must be used as the average terrain elevation.

(b)

(b) If a hill appears to obstruct the radio path, plot the antenna site elevation, the obstruction elevation and the height of the ship station on rectangular coordinate paper using elevation above mean sea level as the vertical scale and distance in statute miles as the horizontal scale. Then draw a straight line between the antenna and the ship.

(c)

(c) If a hill obstructs the imaginary line of sight, determine its height (H) above the imaginary line and its distance (D) from either the coast or ship station, whichever is nearer, as illustrated by examples "A" and "B" on Graph 1.

(d)

(d) Read the shadow loss from this Graph 1 and subtract that loss from the computed received signal.

(e)

(e) Where more than one hill obstructs the transmission path, determine the height and position of a single equivalent hill, as illustrated by example "C" on this graph. Read the shadow loss from this graph for the equivalent hill.

<image 1 not available>

**s 80.771 Method of computing coverage.**

Compute the +17 dBu contour as follows:

(a)

(a) Determine the effective antenna height above mean sea level according to the procedures in s 80.757-s 80.761.

(b)

(b) Determine the effective radiated power according to s 80.765. Determine for each radial the distance from the antenna site to the +17 dBu point of field strength using procedures of s 80.765 and s 80.767.

(c)

(c) Plot on a suitable map each point of +17 dBu field strength for all radials and draw the contour by connecting the adjacent points by a smooth curve.

**s 80.773 Co-channel interference protection.**

(a)

(a) Where a VHF public coast station geographic area licensee shares a frequency with an incumbent VHF public coast station licensee, the ratio of

desired to undesired signal strengths must be at least 12 dB within the service area of the station.

(b)

(b) Where a VHF public coast station geographic area licensee shares a frequency with an incumbent private land mobile radio licensee, the VHF public coast station geographic area licensee must provide at least 10 dB protection to the PLMR incumbent's predicted 38 dBu signal level contour. The PLMR incumbent's predicted 38 dBu signal level contour is calculated using the F(50, 50) field strength chart for Channels 7-13 in s 73.699 (Fig. 10a) of this chapter, with a 9 dB correction factor for antenna height differential, and is based on the licensee's authorized effective radiated power and antenna height-above-average-terrain.

(c)

(c) VHF public coast station geographic area licensees are prohibited from exceeding a field strength of +5 dBu (decibels referenced to 1 microvolt per meter) at their service area boundaries, unless all the affected VHF public coast station geographic area licensees agree to the higher field strength.

#### **s 80.801 Applicability.**

~~The radiotelegraph requirements of Part II of Title III of the Communications Act apply to all passenger ships irrespective of size and cargo ships of 1600 gross tons and upward. The Safety Convention applies to such ships on international voyages. These ships are required to carry a radiotelegraph installation complying with this Subpart.~~

#### **s 80.802 Inspection of station.**

(a)

~~(a) Every ship of the United States subject to Part II of Title III of the Communications Act or Chapter IV of the Safety Convention equipped with a radiotelegraph installation must have the required radio equipment inspected by an FCC-licensed technician holding a Second Class Radiotelegraph Operator's Certificate, or First Class Radiotelegraph Operator's Certificate once every 12 months. If the ship passes the inspection the technician will issue a Cargo Ship Safety Radio Certificate. Cargo Ship Safety Radio Certificates may be obtained from the Commission's National Call Center--(888) 225-5322--or from its Forms contractor.~~

~~(a) (1)~~

~~(1) The effective date of ship safety certificates is the date the station is found to be in compliance or not later than one business day later.~~

~~(a) (2)~~

~~(2) At inspection, the minimum field strength capability of the main installation and reserve installation when connected to the main antenna may be shown by the licensee by one of the following methods:~~

~~(a) (2) (i)~~

~~(i) Producing a record of communications on 500 kHz over a minimum distance of 370 kilometers (200 nautical miles) for the main installation and 185 kilometers (100 nautical miles) for the reserve installation which demonstrates the transmission and reception of clearly perceptible signals from ship to ship by day and under normal conditions and circumstances, or~~

~~(a) (2) (ii)~~

(ii) Provide documentation by a professional engineer, or a person holding a first or second class radiotelegraph operator's certificate, or a general radiotelephone operator license, that the installation produces at 1.85 kilometers (one nautical mile) a minimum field strength of thirty (30) millivolts per meter for the main installation and ten (10) millivolts per meter for the reserve installation. The licensee shall provide, at a minimum, the name and license number of the individual making the measurements or record of communications.

(b)

(b) Certificates issued in accordance with the Safety Convention must be posted in a prominent and accessible place in the ship.

#### **s 80.804 Radio station.**

The required radio station must comply with the provisions of this subpart in addition to all other applicable requirements of this part. The radio station consists of a radiotelegraph station and a ship radar station. The radiotelegraph station comprises a main and a reserve radiotelegraph installation, electrically separate and electrically independent of each other except as otherwise provided in paragraph (b) of s 80.805, a radiotelephone installation and such other equipment as may be necessary for the proper operation of these installations. The ship radar station comprises a radar installation and such other equipment and facilities as may be necessary for its proper operation.

#### **s 80.805 Radio installations.**

(a)

(a) The main radiotelegraph installation includes a main transmitter, a main receiver, a main power supply, a main antenna system and a 2182 kHz radiotelephone distress frequency watch receiver.

(b)

(b) The reserve radiotelegraph installation includes a reserve transmitter, a reserve receiver, a reserve power supply, emergency electric lights and reserve antenna system: except that:

(b) (1)

(1) In installations on cargo ships of 300 gross tons and upwards but less than 1,600 gross tons, and in installations on cargo ships of 1,600 gross tons and upwards installed prior to November 19, 1952, if the main transmitter complies with all the requirements for the reserve transmitter, the latter may be omitted.

(b) (2)

(2) A cargo ship the keel of which was laid prior to June 1, 1954, may either be equipped with a reserve antenna or provided a spare antenna consisting of a single-wire transmitting antenna (including suitable insulators) completely assembled for immediate installation.

(c)

(c) The medium frequency radiotelephone installation includes a radiotelephone transmitter, a radiotelephone receiver and an appropriate antenna system.

#### **s 80.806 Requirements of main installation.**



All main radiotelegraph installations must meet the following requirements:

(a)

(a) The main antenna must be installed and protected to ensure proper operation of the station. Effective October 14, 1986, the main antenna energized by the main transmitter on the frequency 500 kHz must produce at one nautical mile a minimum field strength of thirty (30) millivolts per meter. If the main antenna is suspended between masts or other supports liable to whipping, a safety link must be installed which, under heavy stress, will reduce breakage of the antenna, the halyards, or any other antenna-supporting elements.

(b)

(b) The main transmitter must be capable of meeting the requirements of s 80.253.

(c)

(c) The main receiver must efficiently receive A1A and A2A emission on all frequencies within the bands 100-200 kHz and 405-535 kHz. It must have headphones capable of effective operation. The main receiver must have sufficient sensitivity to effectively operate headphones or a loudspeaker when the receiver input is 50 microvolts.

(d)

(d) The main power supply must simultaneously (1) energize the main transmitter at its required antenna power, and the main receiver, (2) charge at any required rate all batteries forming part of the radiotelegraph station, and (3) charge the main power supply for this purpose at all times including times of inspection. Under this load condition the voltage of the main power supply at the radio room terminals must not deviate from its rated value by more than 10 percent on vessels completed on or after July 1, 1941, nor by more than 15 percent on vessels completed before that date. While at sea, batteries forming part of the main installation must be fully charged daily.

(e)

(e) To-measure voltage(s) of the main power supply at its radio room terminals, voltmeter(s) must be permanently installed in the radiotelegraph operating room.

(f)

(f) The main installation must be provided with a device permitting changeover from transmission to reception and vice versa without manual switching.

(g)

(g) The main installation must be capable of being quickly connected with and tuned to the main antenna and the reserve antenna if one is installed.

#### **s 80.807 Requirements of radiotelephone installation.**

All radiotelephone installations in radiotelegraph equipped vessels must meet the following conditions.

(a)

(a) The radiotelephone transmitter must be capable of transmission of A3E or H3E emission on 2182 kHz and must be capable of transmitting clearly perceptible signals from ship to ship during daytime, under normal conditions over a range of 150 nautical miles when used with an antenna system in accordance with paragraph (c) of this section. The transmitter must:

(a) (1)

(1) Have a duty cycle which allows for transmission of the radiotelephone alarm signal described in s 80.221.

(a) (2)

(2) Provide 25 watts carrier power for A3E emission or 60 watts peak power on H3E emission into an artificial antenna consisting of 10 ohms resistance and 200 picofarads capacitance or 50 ohms nominal impedance to demonstrate compliance with the 150 nautical mile range requirement.

(a) (3)

(3) Have a visual indication whenever the transmitter is supplying power to the antenna.

(a) (4)

(4) Have a two-tone alarm signal generator that meets s 80.221.

(a) (5)

(5) The radiotelephone transmitter required by this paragraph may be contained in the same enclosure as the receiver required by paragraph (b) of this section. Additionally, these transmitters may have the capability to transmit J3E emissions.

(b) (1)

(b)(1) The radiotelephone receiver must receive A3E and H3E emissions when connected to the antenna system specified in paragraph (c) this section and must be preset to 2182 kHz. The receiver must additionally:

(b) (1) (i)

(i) Provide an audio output of 50 milliwatts to a loudspeaker when the RF input is 50 microvolts. The 50 microvolt input signal must be modulated 30 percent at 400 Hertz and provide at least a 6 dB signal-to-noise ratio when measured in the rated audio bandwidth.

(b) (1) (ii)

(ii) Be equipped with one or more loudspeakers capable of being used to maintain a watch on 2182 kHz at the principal operating position or in the room from which the vessel is normally steered.

(b) (2)

(2) The receiver required by s 80.805 may be used instead of this receiver. If the watch is stood at the place from which the ship is normally steered, a radiotelephone distress frequency watch receiver must be used for this purpose.

(b) (3)

(3) This receiver may be contained in the same enclosure as the transmitter required by paragraph (a) of this section. Additionally, these receivers may have the capability to receive J3E emissions.

(c)

(c) The antenna system must be as nondirectional and efficient as is practicable for the transmission and reception of radio ground waves over seawater. The installation and construction of the required antenna must ensure, insofar as is practicable, proper operation in time of emergency. If the required antenna is suspended between masts or other supports subject to whipping, a safety link must be installed which under heavy stress will reduce breakage of the antenna, the halyards, or any other supporting elements.

(d)

(d) The radiotelephone installation must be provided with a device for permitting changeover from transmission to reception and vice versa without manual switching.

(e)

(e) An artificial antenna must be provided to permit weekly checks, without causing interference, of the automatic device for generating the radiotelephone alarm signal on frequencies other than the radiotelephone distress frequency.

(f)